

New Host Plants of Two Japanese *Zeugophora* Species (Chrysomelidae, Zeugophorinae)

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Abstract Several new host plants are reported for two *Zeugophora* species (Chrysomelidae, Zeugophorinae) with some comments on their host preference. Three new host plants of the Celastraceae are newly recorded for *Zeugophora (Pedrillia) annulata* (BALY, 1873). Two plants of the Symplocaceae are recorded for the first time as hosts of *Z. (P.) varipes* (JACOBY, 1885). All of these observations were made in Toyama Prefecture, central Honshu, Japan.

Concerning the host plants of *Zeugophora* species (Chrysomelidae, Zeugophorinae) our knowledge is rather scarce (JOLIVET & HAWKESWOOD, 1995). Of the nine zeugophorine species hitherto known from Japan, host plants have been known for the following four species: several species of the Celastraceae for *Zeugophora (Pedrillia) annulata* (BALY, 1873) and *Z. (P.) bicolor* (KRAATZ, 1879) (CHÙJŌ & KIMOTO, 1961), *Salix* sp. of the Salicaceae for *Z. (Zeugophora) hozumii* CHÙJŌ, 1951 (TAKIZAWA, pers. comm.; SUZUKI & FUJIMOTO, 1997), and *Euonymus japonicus* THUNB. (?) (Celastraceae) for *Z. (Z.) chujoi* OHNO, 1961 (KIMOTO & TAKIZAWA, 1994).

In this short paper we report several new host plants for two *Zeugophora* species that we confirmed in Toyama Prefecture, central Honshu, Japan. In the following data table the adult specimens were collected by us.

Before going further, we wish to express our deep appreciation to Dr. Shun-Ichi UÉNO (National Science Museum (Nat. Hist.), Tokyo) for his critical reading of the manuscript, to Prof. Naohiro NARUHASHI (Toyama University) for his kind identification of host plants, to Dr. Haruo TAKIZAWA for his kind offer of valuable information about the host plant of *Z. (Z.) hozumii*, and to Ms. Eri MORIOKA for her kind assistance in the field survey.

1. *Zeugophora (Pedrillia) annulata* (BALY, 1873)
15 exs., 21–IV–2004, Yatsuo-machi (Mita), Toyama-shi, Toyama Pref., Honshu, Japan. Host plant: *Celastrus orbiculatus* THUNB. [Japanese name: Tsuruumemodoki] (Family Celastraceae, Subfamily Celastroideae, Tribe Celastreae) (New Record).
4 exs., 8–V–2004, Kamiichi-machi (Banba-jima), Naka-Niikawa-gun. Host plant: *Euonymus melananthus* FRANCH. et SAVAT. [Japanese name: Sawadatsu] (Celastraceae)

troideae, Tribe Euonymeae; Section* Melanocarya) (New Record) [*Infrageneric classification of the Celastraceae will be mentioned below.]

2 exs., 8-V-2004, Kamiichi-machi (Banba-jima), Naka-Niikawa-gun, Toyama Pref. Host plant: *Euonymus lanceolatus* YATABE [Japanese name: Murasakiyumi] (Celastroideae, Euonymeae; Section Melanocarya) (New Record)

7 exs., 7-V-2004, Yatsuo-machi (Tochiori), Toyama-shi. Host plant: *Euonymus oxyphyllus* MiQ. [Japanese name: Tsuribana] (Celastroideae, Euonymeae; Section Uniloculares) [Reference data for discussion].

The following plants, all of which belong to the subfamily Celastroideae, have been known as hosts of this zeugophorine species: *Euonymus sieboldianus* Bl. (belonging to the Section Euonymus), *Tripterygium regelii* SPRAGUE et TAKEDA (belonging to the Subfamily Tripterigoideae) (CHŪJŌ & KIMOTO, 1961), and *Euonymus oxyphyllus* MiQ. (belonging to the Section Uniloculares) (KIMOTO & TAKIZAWA, 1994). This species is commonly found on *Euonymus alatus* (THUNB.) SIEB. f. *striatus* (THUNB.) MAKINO (belonging to the Section Euonymus) in various localities of Toyama Prefecture. *Euonymus alatus* and *Tripterygium regelii* known as the hosts of *Z. (P.) annulata* have never been hitherto observed in Toyama Prefecture as hosts of the species.

The genus *Euonymus* includes a number of species. The following table shows the classification system of the family Celastraceae from Japan demonstrated by SHIMIZU (1989). In his system 'Section' is used as an infrageneric category instead of ordinary 'Subgenus'. In the following table the taxa with asterisks show those including host plants of *Z. (P.) annulata*.

Family Celastraceae
Subfamily Celastroideae
Tribe Euonymeae
Genus <i>Euonymus</i>
Section Melanocarya*
Section Multiovulatus
Section Ilicifolius
Section Euonymus*
Section Uniloculares*
Genus <i>Microtropis</i>
Tribe Celastreae
Genus <i>Celastrus</i> *
Genus <i>Maytenus</i>
Subfamily Tripterigoideae
Genus <i>Tripterygium</i> *

This table suggests that *Z. (P.) annulata* is a species having a rather selective host preference, though it seems widely to feed on various plants of the Celastraceae. Ac-

cording to the categorization of host preference in phytophagous insects proposed by BERNAYS and CHAPMAN (1994), it belongs to a typical species showing the so-called ‘disjunctive oligophagy’. It is noticed that as far as we know no host plant of this *Zeugophora* species has been known for two Sections Multiovulatus and Ilicifolius of the genus *Euonymus*. In Toyama Prefecture this species has not been hitherto found on the plants other than *Euonymus alatus*.

2. *Zeugophora (Pedrillia) varipes* (JACOBY, 1885)

6 exs., 21–IV–2004, Yatsuo-machi (Mita), Toyama-shi; 2 exs., 12–V–2004, same locality; 1 ex., 27–V–2004, Jôhana-machi (Nawa-ga-ike), Nanto-shi; 2 exs., 23–IV–2005, Yatsuo-machi (Mita); 6 exs., 27–IV–2005, same locality; 1 ex., 18–VI–2005, same locality. Host plants: *Symplocos coreana* (LEV.) OHWI [Japanese name: Sawafutagi]; *S. chinensis* (LOUR.) DRUCE var. *leucoarapa* (NAKAI) OHWI f. *pilosa* (NAKAI) OHWI [Japanese name: Tanna-Sawafutagi] (Symplocaceae) (Both New Records).

This zeugophorine species is considerably rare and no host plant has hitherto been recorded for the species. SUZUKI and FUJIMOTO (1997) recorded two adults of this species at Yatsuo-machi (Tochiori-tôge), Toyama-shi (first collecting record from Toyama Prefecture), but they were unable to confirm its host plant. SUZUKI, one of us, found six adults of this species feeding on the young leaves of *Symplocos coreana* and *S. chinensis* var. *leucoarapa* f. *pilosa* in April, 2000. We occasionally reconfirmed the adults feeding on the same plants at the same locality in 2004 and 2005. This is a typical species of ‘monophagy’ defined by BERNAYS and CHAPMAN (1994). We attempted to rear some adults in a cage in our laboratory and succeeded to make some of them lay eggs in leaves of the host plant. We also found many larvae mining the leaves of the two host plants at several localities of Toyama Prefecture. Furthermore, we succeeded to comprehend the synopsis of the life history of this species. Concerning the life history and morphology of immature stages we will report in a separate paper (SUZUKI & MATSUMURA, in preparation).

According to JOLIVET and HAWKESWOOD (1995), the following plant families have been known as the hosts of the family Zeugophorinae: Salicaceae, Juglandaceae, Corylaceae (*s.l.*; occasionally included in Betulaceae), Betulaceae, Santalaceae, and Celastraceae. JOLIVET and HAWKESWOOD (1995) mentioned as follows: “these plant families are somewhat closely placed in the classification of SWAIN (1963), although CRONQUIST (1981) placed the Salicaceae some distance from the others”. Symplocaceae, which includes two species recorded here as the hosts of *Z. (P.) varipes*, is newly added as a plant family of the hosts of Zeugophorinae. It should be pointed out that all of the families listed by JOLIVET and HAWKESWOOD (1995) as the hosts of Zeugophorinae belong to the Subclass ‘Choripetalae’ of the Class Dicotyledoneae but the Symplocaceae to the Subclass ‘Sympetalae’. This classification does not always reflect the true phylogenetic relationship among plants; i.e., the distinction of the Choripetalae and the Sympetalae is based on the so-called ‘grades’. No reliable phylogenetic classification sys-

tem of the Dicotyledoneae has been established. At present we cannot put expectation and confidence in a specific existing system.

Postscript

After the completion of the manuscript, we became aware that KAWASE (2002) reported on the host plant of *Zeugophora (Pedrillia) varipes*. He collected several individuals of the species from *Symplocos coreana* at several places in Ishikawa Prefecture, Hokuriku District. Though he did not confirm it but pointed out the possibility of the latter plant was a host of this *Zeugophora* species. We thank Mr. T. MIZUNO (Toyama University) who kindly told us the existence of KAWASE's report.

KAWASE, H., 2002. Collecting data of *Zeugophora (Pedrillia) varipes* (JACOBY). *Tokkuribachī, Komatsu*, (69): 21. (In Japanese.)

要 約

鈴木邦雄・松村洋子：日本産モモブトハムシ属2種の新寄主植物。——モモブトハムシ亜科の日本産2種について、富山県下で観察された新寄主植物を記録した。ワモンモモブトハムシ *Zeugophora (Pedrillia) annulata* (BALY, 1873)の寄主植物としては、従来ニシキギ科のいくつかの種が知られていたが、新たにツルウメモドキ、サワダツ、ムラサキマユミの3種を追加記録した。アカイロモモブトハムシ *Z. (P.) varipes* (JACOBY, 1885)については、これまで寄主植物がまったく不明であったが、本論文でハイノキ科のサワフタギとタンナサワフタギを初めて記録した。ハイノキ科は、モモブトハムシ亜科の寄主植物として初めて記録される科である。この亜科の寄主植物選好性について、いくつかの問題を議論した。

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